

REMARKS

SUMMARY:

The present application sets forth claims 1-19, with claims 1, 5 and 11 being in independent form.

Original claims 1-2 and 4-10 stand rejected under 35 U.S.C. §112, first paragraph. Original claims 7-10 stand rejected under 35 U.S.C. §112, second paragraph. Original claims 5, 6, 11, 12, 18 and 19 stand rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,621,682 (Takakuwa et al.) Claims 13-17 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Takakuwa et al. in combination with U.S. Patent No. 6,232,144 (McLoughlin). Claims 7 and 8 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Takakuwa et al. in combination with U.S. Patent No. 6,496,355 (Galvagni et al.)

Responses to each of the characterizations above (including a traversal of each prior art rejection) will now be presented.

ALLOWED SUBJECT MATTER:

Applicants note with appreciation official indication that claims 1, 2-4, 9 and 10 are indicated as having allowable subject matter and that if rewritten to overcome the 35 U.S.C. §112 rejections (and dependent claims rewritten in independent form to include the limitations of base claims and any intervening claims) would be allowed.

35 U.S.C. §112, FIRST PARAGRAPH, REJECTIONS:

Original claims 1-2 and 4-10 stand rejected under 35 U.S.C. §112, first paragraph, as allegedly based on disclosure that is not enabling with respect to how the conductive tabs are plated as they are interspersed between the dielectric layers and not recited as being "exposed".

Present claim 1 is amended to more particularly set forth that at least a portion of each respective conductive tab is exposed. Applicants submit that such amendment addresses the issues raised in the December 7, 2004 Office Action and overcomes the

subject rejection under 35 U.S.C. §112, first paragraph, for clear allowance of claims 1-4.

Present claim 5 is amended to more particularly set forth that the plurality of conductive tabs are respectively positioned at selected edges of the plurality of dielectric layers at which they are embedded. Such an arrangement would accommodate the exposure of portions of each conductive tab to a plating solution as subsequently set forth in claim 5. Applicants submit that such amendment addresses the issues raised in the December 7, 2004 Office Action and overcomes the subject rejection of claims 5-10 under 35 U.S.C. §112, first paragraph.

Based on the present amendments and the above remarks, withdrawal of the 35 U.S.C. 112, first paragraph, rejection is respectfully requested.

35 U.S.C. §112, SECOND PARAGRAPH, REJECTIONS:

Original claims 7-10 stand rejected under 35 U.S.C. §112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. More particularly, the Examiner suggests deleting the term “generally” used in such claims.

In response to the above characterization, the term “generally” used in claims 7-10, respectively, has been replaced with the word “substantially”, which Applicants submit is definite in accordance with 35 U.S.C. §112, second paragraph. §2173.05(b) of the MPEP states that the term “substantially” is often used in conjunction with another term to describe a particular characteristic. Further, the court held that the limitation “which produces substantially equal E and H plane illumination patterns” was definite because one of ordinary skill in the art would know what was meant by “substantially equal.” *Andrew Corp. v. Gabriel Electronics*, 847 F.2d 819, 6 USPQ2d 2010 (Fed. Cir. 1988).

Similar to the above situation, Applicants submit that use of the term “substantially” in claims 7-10 as in “substantially planar discoidal” or “substantially linear” is intended to mean that such elements are formed in such respective shapes, but may also encompass slight variations to such shapes as may result from minor

variation in intended alignment of the conductive tabs. Such variations may naturally occur in any manufacturing process, and thus it is not unreasonable to refer to such shapes as formed in a substantially particular shape. Applicants submit that such terminology is definite in accordance with 35 U.S.C. §112, second paragraph, and is also supported in accordance with §2173 of the MPEP. As such, withdrawal of the 35 U.S.C. §112, second paragraph, rejection of claims 7-10 is respectfully requested.

35 U.S.C. §102(e) REJECTION:

Original claims 5, 6, 11, 12, 18 and 19 stand rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,621,682 (Takakuwa et al.) Based on the following remarks, Applicants respectfully traverse such alleged anticipation and respectfully request withdrawal of such rejections.

Present claim 5 sets forth a method of directing the formation of plating material in a multi-layer electronic component, including in part a step of exposing a plurality of conductive tabs to a plating solution whereby the embedded conductive tabs form nucleation points for plating material within the plating solution and guide the direction of the deposition of the plating material along the exposed plurality of conductive tabs.

In accordance with the method of claim 5, a unique type of plated structure can be formed on a multi-layer electronic component based on the location of exposure of conductive elements (i.e., the conductive tabs of claim 5). By subjecting the exposed portions of the conductive elements to a plating solution (e.g., by immersing the component in a liquid plating solution), plating material is deposited along the exposed plurality of conductive tabs. This phenomenon refers to the “self-determining” nature of the subject devices and applied plated structures since the formation of such plated structures and corresponding deposition of plating material is determined by the specific configuration of exposed conductive tabs.

Numbered page 3 of the December 7, 2005 Office Action sets forth that Takakuwa et al. discloses all elements of original claim 5. Takakuwa et al. is directed to a method of manufacturing a laminated electronic part, and particularly discloses the use of a mask-like fixture that is (precisely) placed over the part, such that metal is

subsequently evaporated through the aperture onto internal electrode layer tabs. Side bars etched into the mask alter the stream of metal particles to cause a tapering of the resultant metal lay- down. (See col. 4, lines 38-47.) In contrast to the method set forth in present claim 5, the direction of deposition of plating material for the external electrodes formed in Takakuwa et al. is not determined by the location of the exposed conductive tabs. In Takakuwa et al., the direction of deposition of plating material is determined solely by the mask outlines over which a dry coating of metal particles is applied.

For at least the reasons set forth above, Applicants submit that Takakuwa et al. fails to disclose all elements of present claim 5, especially a step of exposing conductive tabs to a plating solution whereby the conductive tabs serve to guide the direction of deposition of the plating material. As such, Takakuwa et al. cannot by law serve to anticipate claim 5 and withdrawal of the alleged anticipation is respectfully requested.

With regards to claim 6, Applicants submit that claim 6 should also be allowed since such claim depends from otherwise allowable claim 5 and further limits same.

With regards to claim 11, such claim sets forth a method of making a multi-layer electronic component, including in part a step of exposing varied width portions of electrodes along at least one edge of a plurality of substrates.

In contrast to the features set forth in original claim 11, Takakuwa et al. discloses exposing internal electrode outlet portions 101a that are substantially the same width. Exposed portions having the same width are limited in the type of plating structure that can be formed in accordance with the method of claim 11. More particularly, the exposed internal electrode outlet portions of Takakuwa et al. are only potentially capable of forming rectangular external electrodes thereon. This is further supported by the fact that the film forming jig 130 utilized in Takakuwa et al. to form external electrodes (see col. 8, lines 30-45) employs rectangular mask outlines.

It is often advantageous to provide exposed electrode portions having varied widths such that formation of plating structures having varied geometric patterns may be implemented. One particular example of a geometric pattern that is useful in some embodiments is a discoidal (i.e., round) shape, which may effectively serve as a ball-

limiting metallurgy for subsequent application of solder balls to the electronic components.

For at least the reasons set forth above, Applicants submit that Takakuwa et al. fails to disclose all elements of present claim 11, especially a step of exposing varied width portions of electrodes along at least one edge of a plurality of substrates. As such, Takakuwa et al. cannot by law serve to anticipate claim 11 and withdrawal of the alleged anticipation is respectfully requested.

With regard to claims 12, 18 and 19, Applicants submit that such claims should also be allowed since such claims depend from otherwise allowable claim 11 and further limit same. Applicant further submits that the Examiner has failed to demonstrate how the limitations of claims 18 and 19 are disclosed in Takakuwa et al.

35 U.S.C. §103(a) REJECTIONS:

Claims 13-17 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Takakuwa et al. in combination with U.S. Patent No. 6,232,144 (McLoughlin).

Based on the remarks provided in the above section of this response, Applicants submit that independent claim 11 is patentable over Takakuwa et al. Applicants further submit that McLoughlin fails to cure the deficiencies of Takakuwa et al. More particularly, neither Takakuwa et al. nor McLoughlin disclose singularly or in combination a step of providing varied width portions of electrodes along at least one edge of a plurality of substrates. As previously mentioned, it is often advantageous to provide exposed electrode portions having varied width such that formation of plating structures having varied geometric patterns may be implemented. One particular example of a geometric pattern that is useful in some embodiments is a discoidal shape, which may effectively serve as a ball-limiting metallurgy for subsequent application of solder balls to the electronic components.

As such, claim 11 should be allowed over the proposed combination of Takakuwa et al. and McLoughlin references. Since claims 13-17 variously depend from otherwise allowable claim 11 and further limit same, Applicants submit claims 13-17

should also be allowed. Withdrawal of the 35 U.S.C. § 103(a) rejection of such claims is respectfully requested.

Claims 7 and 8 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Takakuwa et al. in combination with U.S. Patent No. 6,496,355 (Galvagni et al.)

Based on the remarks provided in the above section of this response, Applicants submit that independent claim 5 is patentable over Takakuwa et al. Applicants further submit that Galvagni et al. fails to cure the deficiencies of Takakuwa et al. More particularly, neither Takakuwa et al. nor Galvagni et al. disclose singularly or in combination a step of exposing conductive tabs to a plating solution whereby the embedded conductive tabs guide the direction of the deposition of the plating material along the exposed plurality of conductive tabs. Since claims 7 and 8 depend from otherwise allowable claim 5 and further limit same, Applicants submit that claims 7 and 8 should also be allowed.

With further regard to claims 7 and 8, Applicants submit that neither Takakuwa et al. nor Galvagni et al. disclose singularly or in combination a step of forming plating material in a generally discoidal (i.e., round) configuration. External electrodes in such references appear only to be provided in a generally rectangular format. The formation of newly shaped plating structures can be accomplished in accordance with the method of claim 5 since it is the location of exposed conductive portions (as opposed to any sort of application machine or masking guidelines) that determines the location of plating material deposition.

For at least the reasons set forth above, Applicants submit that claims 7 and 8 are patentable over Takakuwa et al. and Galvagni et al. Applicants respectfully request withdrawal of the 35 U.S.C. § 103(a) rejection of such claims.

CONCLUSION:

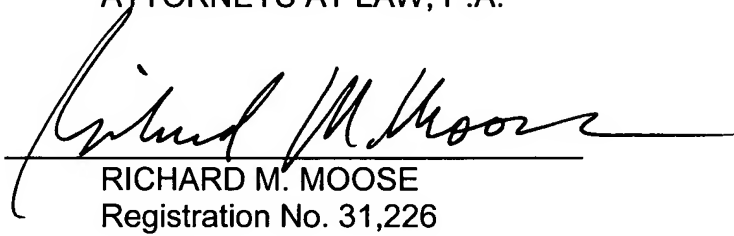
Inasmuch as all outstanding issues have been addressed, it is respectfully submitted that the present application, including claims 1-19, is in complete condition for issuance of a formal Notice of Allowance, and action to such effect is earnestly solicited. The Examiner is invited to telephone the undersigned at his convenience should only

minor issues remain after consideration of this response in order to permit early resolution of the same or if he has any questions regarding this matter, particularly in light of previously indicated allowable subject matter.

Respectfully submitted,

DORITY & MANNING,
ATTORNEYS AT LAW, P.A.

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Date



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